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Analytical Methodology Summary

Volatile Organics:

Water samples are analyzed for volatile organics by purge and trap GC/MS as specified in EPA Method 624. Solid samples are analyzed for priority pollutant volatile organics as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8240. Water samples are analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX) by GC-PID as specified in EPA Methods 503.1 and 602. Solid samples are analyzed for BTEX as specified in EPA Method 8020.

Acid and Base/Neutral Extractable Organics:

Water samples are analyzed for acid and/or base/neutral extractable organics by GC/MS in accordance with EPA Method 625. Solids are analyzed for acid and/or base/neutral extractable priority pollutants as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8270.

GC/MS Nontarget Compound Analysis:

Analysis for nontarget compounds is conducted, upon request, in conjunction with GC/MS analyses by EPA Methods 624, 625, 8240 and 8270. Nontarget compound analysis is conducted using a forward library search of the EPA/NIH/NBS mass spectral library of compounds at the greatest apparent concentration (10% or greater of the nearest internal standard) in each organic fraction (15 for volatiles, 15 for base/neutrals and 10 for acid extractables).

Organochlorine Pesticides and PCBs:

Water samples are analyzed for organochlorine pesticides and PCBs by dual column gas chromatography with electron capture detectors as specified in EPA Method 608. Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition) Method 8080.

Total Petroleum Hydrocarbons:

Water samples are analyzed for petroleum hydrocarbons by I.R. using EPA Method 418.1. Solid samples are prepared for analysis by soxhlet extraction consistent with the March 1990 N.J. DEP "Remedial Investigation Guide" Apendix A, page 52, and analyzed by U.S. EPA Method 418.1.

Metals Analysis:

Metals analyses are performed by any of four techniques specified by a Method Code provided on each data report page, as follows:

P - Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP)

A - Flame Atomic Absorption

F - Furnace Atomic Absorption

CV - Manual Cold Vapor (Mercury)

Water samples are digested and analyzed using EPA methods provided in "Methods for Chemical Analysis of Water and Wastewater" (EPA 600/4-79-020). Solid samples are analyzed as specified in the EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition); samples are digested according to Method 3050 "Acid Digestion of Soil, Sediments and Sludges."

Specific method references for ICP analyses are water Method 200.7 and solid Method 6010. Mercury analyses are conducted by the manual cold vapor technique specified by water Method 245.1 and solid Method 7471. Other specific Atomic Absorption method references are as follows:

	Water Test Method		Solid Test Method	
Element	Flame	Furnace	Flame	Furnace
Aluminum	202.1	202.2	7020	--
Antimony	204.1	204.2	7040	7041
Arsenic	--	206.2	--	7060
Barium	208.1	--	7080	--
Beryllium	210.1	210.2	7090	7091
Cadmium	213.1	213.2	7130	7131
Calcium	215.1	--	7140	--
Chromium, Total	218.1	218.2	7190	7191
Chromium, (+6)	218.4	218.5	7197	7195
Cobalt	219.1	219.2	7200	7201
Copper	220.1	220.2	7210	--
Iron	236.1	236.2	7380	--
Lead	239.1	239.2	7420	7421
Magnesium	242.1	--	7450	--
Manganese	243.1	243.2	7460	--
Nickel	249.1	249.2	7520	--
Potassium	258.1	--	7610	--
Selenium	--	270.2	--	7740
Silver	272.1	272.2	7760	--
Sodium	273.1	--	7770	--
Tin	283.1	283.2	7870	--
Thallium	279.1	279.2	7840	7841
Vanadium	286.1	286.2	7910	7911
Zinc	289.1	289.2	7950	--

Cyanide:

Water samples are analyzed for cyanide using EPA Method 335.2. Cyanide is determined in solid samples as specified in the EPA Contract Laboratory Program IFB dated July 1988, revised February 1989.

Phenols:

Water samples are analyzed for total phenols using EPA Method 420.1. Total phenols are determined in solid samples by preparing the sample as outlined in the EPA, Contract Laboratory Program IFB for cyanide, followed by a phenols determination using EPA Method 420.1.

Cleanup of Semivolatile Extracts:

Upon request Method 3611 Alumina Column Cleanup and/or Mehtod 3650 Acid-Base Partition Cleanup are performed to improve detection limits by the removal of saturated hydrocarbon interferences.

Hazardous Waste Characteristics:

Samples for hazardous waste characteristics are analyzed as specified in the U.S. EPA publication "Test Methods for Evaluating Solid Waste" (SW-846, 3rd Edition). Specific method references are as follows:

Ignitability - Method 1020

Corrosivity - Water pH Method 9040
Soil pH Method 9045

Reactivity - Chapter 7, Section 7.3.3 and 7.3.4 respectively for hydrogen cyanide and hydrogen sulfide release.

Toxicity - TCLP Method 1311

Miscellaneous Parameters:

Additional analyses performed on both aqueous and solid samples are in accordance with methods published in the following references:

- Test Methods for Evaluating Solid Wastes, SW-846 3rd Edition, November 1986.
- Standard Methods for the Examination of Water and Wastewater, 17th Edition.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, 1979.

DATA REPORTING QUALIFIERS

ND - The compound was not detected at the indicated concentration.

B - The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 1/12/93
Job No.: D171 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2135

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

LEAD

Lab No. 77853
Client ID: Stockpile SR-2

Parameter	Result	Matrix Spike % Recovery	Bias Corrected Result	Regulatory Level
Lead	2.4	111	2.2	5.0

Quantitation Limits: 0.2 mg/l for lead

Units: Results and Regulatory Levels are in mg/l

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 1/12/93
Job No.: D171 - Hovnanian
N.J. Certified Lab No. 12543
QA Batch 2135

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

LEAD

Lab No. 77854
Client ID: Stockpile SR-3

Parameter	Result	Matrix Spike % Recovery	Bias Corrected Result	Regulatory Level
Lead	0.60	111	0.54	5.0

Quantitation Limits: 0.2 mg/l for lead

Units: Results and Regulatory Levels are in mg/l

J.M. Sorge, Inc.
50 County Line Road
Somerville, NJ 08876
Attention: Mr. Chris Finley

Report Date: 1/12/93
Job No.: D171 - Hovnanian
N.J. Certified Lab No. 12543

QA SUMMARY - DUPLICATES and BLANKS - HAZ. WASTE CHARACTERISTICS

TCLP Parameter	QA Batch No.	Matrix Spike (mg/l)	Matrix Spike Dup (mg/l)	Lab Blank
Lead	2135	6.0	5.5	ND

QA SUMMARY - MATRIX SPIKE RECOVERY - HAZ. WASTE CHARACTERISTICS

Parameter	Amount Spiked (ug)	Sample Amount (ug)	Matrix Spike Amt. Rec. (ug)	Matrix Spike % Recovery
Lead	500	43.0	600	111

NON-CONFORMANCE SUMMARY

Envirotech Research, Inc. Job Number: D171

Volatile Organics Analysis:

All data conforms with method requirements _____; or
Analysis was not requested ___/___; or
Non-conformance for the specific samples listed is as follows:

_____

_____

_____

_____

See continuation page if checked ( )

Base/Neutral and/or Acid Extractable Organics:

All data conforms with method requirements _____; or
Analysis was not requested ___/___; or
Non-conformance for the specific samples listed is as follows:

_____

_____

_____

_____

See continuation page if checked ( )

PCBs and/or Organochlorine Pesticides:

All data conforms with method requirements _____; or
Analysis was not requested ___/___; or
Non-conformance for the specific samples listed is as follows:

_____

_____

_____

_____

See continuation page if checked ( )

ENVIROTECH RESEARCH, INC.

Non-conformance Summary, Page 2 of 2
Envirotech Research, Inc. Job Number: D171

Metals Analysis:

All data conforms with method requirements ✓; or
Analysis was not requested _____; or
Non-conformance for the specific samples listed is as follows:

_____

_____

_____

_____

_____

See continuation page if checked ( )

Total Petroleum Hydrocarbons:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

_____

_____

_____

See continuation page if checked ( )

Cyanide Reactive, Sulfide Reactive, Ignitability, Corrosivity:

All data conforms with method requirements _____; or
Analysis was not requested ✓; or
Non-conformance for the specific samples listed is as follows:

_____

_____

_____

See continuation page if checked ( )

Signature of
Laboratory Manager: [signature] for MSL Date: 1/22/93

KHOV005665

JM Sooge Inc
NAME OF CLIENT (FOR REPORT AND BILLING)
80 County Line Rd
ADDRESS
Somerville NJ 07886
CITY STATE ZIP
Chris Finky
ATTENTION
908 218 0066
PHONE

CHAIN-OF-CUSTODY RECORD

JMS COC 1686

ENVIROTECH JOB NO. D171

Hornastan
PROJECT NAME

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD
EDISON, N.J. 08817
(908) 549-3900

DATE SMPLD.	TIME SMPLD.	SMPLD. BY	MATRIX	PRES.	NO. OF CONT.	SAMPLE LOCATION/DESCRIPTION	ANALYSIS REQUESTED	ENVIROTECH SAMPLE NUMBER
4 Jan 93	0954	AH	SOIL	—	(ab) 1	stockpile SR-2	TCLP Pb	77853
"	1002	"	"	—	#1	" SR-3	TCLP Pb	77854

TOTAL NO. OF CONTAINERS: #2 (ab)

SPECIAL INSTRUCTIONS: rapid turnaround (3 DAY)

1. RELINQUISHED BY: AH	DATE/TIME 4 Jan 93	1. RECEIVED BY: DAVID HUNKELE ENVIROTECH RESEARCH, INC. 1/4/93 11:00	3. RELINQUISHED BY:	DATE/TIME -	3. RECEIVED BY:
2. RELINQUISHED BY:	DATE/TIME -	2. RECEIVED BY:	4. RELINQUISHED BY:	DATE/TIME -	4. RECEIVED BY:

KHOV005666

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

CLIENT Sorge DATE SAMPLED 1/4/93

MATRIX Sol DATE RECEIVED 1/4/93

SAMPLE No. 77853 JOB No. D171

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
TCLP Pb	1/5/93	RR	1/6/93 0121	MR	2135
TCLP Prep	1-5-93	ERC			

KHOV005667

LABORATORY CHRONICLE

ENVIROTECH RESEARCH, INC.
777 NEW DURHAM ROAD, EDISON, NJ 08817
(908) 549-3900

CLIENT Sorge — DATE SAMPLED 1/4/93

MATRIX Sol — DATE RECEIVED 1/4/93

SAMPLE No. 77854 — JOB No. D171

Analytic Parameter	Extraction Date/Time	Extractor's Initials	Analysis Date/Time	Analyst's Initials	QA Batch No.
TCLP Pb	1/5/93	PR	1/13/93 0132	[signature]	2135
TCLP Prep	1-5-93	PR			